

## Claims

- [1] A method for allocating a downlink radio resource in an orthogonal frequency division multiple access (OFDMA) communication system, comprising:
- (a) obtaining a characteristic of a radio channel;
  - (b) determining a modulation and channel encoding level;
  - (c) allocating a radio resource according to a temporal order according to the robustness of the burst having determined modulation and channel encoding level;
  - (d) generating information on the allocated radio resource and mapping the information to a common control block; and
  - (e) transmitting the allocated radio resource in a downlink.
- [2] The method of claim 1, wherein (c) comprises allocating at least one unit resource to the burst, the unit resource including a predetermined symbol interval by a predetermined number of subchannels, and the information on the radio resource allocated to the burst includes number of unit resources allocated to the burst in (d).
- [3] The method of claim 2, wherein the information on the radio resource allocated to the burst further includes information on a unit symbol interval, a start index of the unit resource, and an end index of the unit resource of the burst.
- [4] The method of any one of claims 1 to 3, further comprising, between (b) and (c); designating the size of the unit resource (the number of subchannels by the number of symbols comprising the unit resource and the partial loading factor of the subchannels), and mapping the information to the common control block information.
- [5] The method of claim 4, wherein the size of the unit resource represents the number of available subchannels (i.e., the partial loading factor of the subchannels).
- [6] The method of claim 2, wherein the radio resources are sequentially allocated to the symbol intervals in the order starting from the symbol interval in advance with respect to time from among a plurality of symbol intervals, and a more robust burst is allocated to the symbol interval in advance with respect to time, and a less subchannel index is allocated to the more robust burst with the same symbol interval.
- [7] A method for a subscriber station to access a radio resource in an orthogonal

frequency division multiple access (OFDMA) communication system, comprising:

- (a) retrieving designated burst information in a common control block;
- (b) checking the number of unit resources allocated to the designated burst and the sizes of the previously located bursts from the common control block;
- (c) retrieving the designated burst based on the number of the allocated unit resources, and receiving the designated burst; and
- (d) terminating the receiving operation when the designated burst is received.

- [8] The method of claim 7, wherein the designated burst information further includes information on a unit symbol interval, a start index of the unit resource, and an end index of the unit resource allocated to the burst.
- [9] The method of claim 7, further comprising, between (a) and (b), checking the size of a unit resource (the number of the subchannels by the number of symbols comprising the unit resource) and the size of the number of available subchannels (i.e., determined by the partial loading factors of the subchannels times the total number of subchannels.)
- [10] The method of claim 7, wherein the designated burst information further includes information on a modulation and channel encoding level.
- [11] The method of claim 10, wherein (d) comprises terminating receiving of bursts which are less robust than an operational burst profile.
- [12] A downlink sub-frame in an orthogonal frequency division multiple access (OFDMA) communication system, comprising:
  - a common control block including radio resource allocation information for bursts;
  - wherein the temporal order (i.e., the lower symbol index and the lower subchannel index with the same symbol index) of the bursts corresponds to the descending order of robustness of bursts.
- [13] The downlink sub-frame of claim 12, wherein the radio resource allocation information includes a size of a unit symbol interval, a number of subchannels allocated to the burst, start index of the unit resource, and end index of the unit resource allocated to the burst.
- [14] The downlink sub-frame of claim 13, wherein the common control block further comprises default resource size information for designating the number of available subchannels (i.e., determined by the partial loading factors of the subchannels times the total number of subchannels).